DOCUMENT RESUME

ED 053 894 RE 003 786

AUTHOR Lisman, Linda C.
TITLE Vowel Deletion and Cloze Tests Compared with a Reading Ability Test.
PUB DATE Oct 71
NOTE 64p.; Master's thesis presented to Rutgers, The State University of New Jersey, Oct. 1971

EDRS PRICE EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS *Cloze Procedure, *Correlation, Grade 7, Grade 8, *Intelligence Tests, Masters Theses, Reading Ability, *Reading Tests, Sex Differences, *Vowels

ABSTRACT

Fifty-seven seventh and 60 eighth graders were divided into three reading ability groups. All were given the Wechsler Intelligence Scale for Children (WISC) prior to the study and the Gates-MacGinitie Reading Test Survey E for grades 7 to 9 immediately after the study. A practice sample was given before the tests on prepared vowel deletion and cloze passages. Performance on both tests was correlated with each other, with scores of the reading test, and with the WISC scores. Correlation between vowel deletion and cloze scores was found to be .43 for the total group. Vowel deletion correlated significantly with the reading test (speed, .51; accuracy, .63; vocabulary, .57; and comprehension, .51), and with the IQ test (performance, .39; full scale, .45; and verbal, .37). The correlation was higher for eighth graders on speed, accuracy, and vocabulary, but higher for the seventh graders on comprehension. The cloze test correlated with the reading test as follows: speed, .29; accuracy, .41; vocabulary, .55; and comprehension, .60. It correlated with the IQ test as follows: performance, .28; full scale, .46; verbal, .50. Generally, for all measures except verbal IQ and reading comprehension, the vowel deletion correlations were higher than or almost identical to the cloze correlations for the total population. Tables, a bibliography, and appendixes are included. (AW)

ED 053894

ABSTRACT

The purpose of this study was to determine whether or not a significant correlation existed between a short passage of vowel deletion and (1) the cloze procedure, (2) a standardized reading test, (3) an IQ test.

The population of the study was a group of 117 seventh and eighth grade students. Three reading classes in each grade were used: one of above average reading ability, one of average reading ability, and one of below average reading ability.

At least three days apart, a vowel deletion test (consisting of approximately 50 words with all vowels deleted) and a cloze test (consisting of approximately 350 words with every seventh word deleted) were administered. The resulting scores were then correlated with each other, with the standardized reading test, and with the IQ test, utilizing the Pearson Product Moment Correlation.

The results of these correlations indicated that the vowel deletion passage could measure some aspects of reading comprehension as well as or slightly better than the cloze procedure. For the total group, the correlation between vowel deletion and cloze was .43. The vowel deletion test correlated as follows with the Gates-MacGinitie subtests: (1) with Speed: .51, (2) with Accuracy: .63, (3) with Vocabulary: .57, (4) with Comprehension: .51. The cloze correlated with the Gates-MacGinitie subtests as follows: (1) with Speed: .29, (2) with Accuracy: .41, (3) with Vocabulary: .55,

RE 003 786

(4) with Comprehension: .60. The correlation between IQ and performance on the vowel deletion test was moderately high for the total group: .45. The correlation between IQ and cloze was .46. The eighth grade subjects' correlations between vowel deletion and the standardized reading test were slightly higher than those of the seventh grade subjects.

Because of these results, it would appear that the vowel deletion test measures part of the factors usually called reading comprehension.

TABLE OF CONTENTS

	Page
LIST OF TABLES	iii
Chapter	
I. THE PROBLEM	1
Background of the Problem	1
Statement of the Problem	2
Definition of Terms	3
Limitations of the Study	3
Overview of the Study	4
II. REVIEW OF THE LITERATURE	5
The Cloze Procedure	5
The Vowel Deletion Procedure	13
III. PROCEDURE	18
Subjects	18
Description of Tests	19
Administration of Tests	20
Treatment of Data	21
IV. FINDINGS AND DISCUSSION	22
Discussion	30
V. SUMMARY AND SUGGESTIONS	34
Summary	34
Conclusions Regarding Hypotheses	36
Suggestions for Further Research	37
BIBLIOGRAPHY	39
APPENDIX A	43
APPENDIX B	44
APPENDIX C	46
APPENDIX D	58

Appendix D contains copyrighted material and is not included.

LIST OF TABLES

Table		Page
1.	Correlations of Vowel Deletion and Cloze Scores with Each Other, IQ, and Standardized Reading Scores for All Students	24
2.	Correlations of Vowel Deletion and Cloze Scores with Each Other, IQ, and Standardized Reading Scores for Male and Female 7th Grade Students, Male and Female 8th Grade Students, 7th and 8th Grade Male Students, and 7th and 8th Grade Female Students	26
3.	Means of Variables and Standard Deviations for All Students	28
4.	Means of Variables for Male and Female 7th Grade Students, 7th and 8th Grade Male Students, and 7th and 8th Grade Female Students	29

CHAPTER I

THE PROBLEM

Background of the Problem

The accurate measurement of reading comprehension is an important and necessary task in modern education. Because many educators have recognized that reading without an understanding of the material is fruitless, a great variety of comprehension tests have been devised. However, even with an abundance of measures of comprehension, new and hopefully better ones should be investigated.

In 1953, Taylor developed the cloze technique to be a reliable measure of readability. He assumed that the terms comprehensibility and readability were synonomous. He stated that "the number of missing words any individual guesses correctly may indicate how well he, personally, is able to understand the passage at hand." (Taylor, 1956, p. 44).

The majority of the research done using the cloze technique has supported Taylor's findings regarding comprehension. Experimenters such as Hafner (1965), Bormuth (1963), and Jenkinson (1957) agree that "the ability to read with understanding can be measured rather well by the cloze." (Hafner, 1965, p. 151).

The vowel deletion or vowel cloze test is another example of a recently developed comprehension test which has practical advantages over its predecessors. Like the cloze test, it is relatively easy and inexpensive to construct. Furthermore, it takes much less of the

student's time to complete the entire test than do other measures. It also seems easier for the student to complete, and therefore, less inherently frustrating and test-like. Fry (1968) suggests that further research be done using this "different method of measuring a type of language ability." (Fry, 1968, p. 8). Essentially, vowel deletion is a variation of the whole-word cloze deletion pattern. Hafner (1965, p. 158) agrees with the practicality of this method of measurement and also with the need for further research: "Preliminary results utilizing new cloze deletion patterns indicate that these patterns be used by researchers to develop inventories that provide valuable psychological information in a very short period of time." Preliminary results from Chapanis (1954), Miller and Friedman (1957), and Shannon (1951) show that "the ability to reconstruct abbreviated English passages is highly correlated with a person's general familiarity with the English language, and that both of these are correlated with general mental ability." (Chapanis, 1954, p. 506).

Statement of the Problem

It was the purpose of this study to investigate the following questions: (1) Does a relationship exist between the performance on a short passage of vowel deletion on the reading grade level of the student and (a) the cloze procedure (b) a standardized reading test (c) the intellectual level (as measured by IQ)? (2) Will the performance on the vowel deletion passage correlate more with reading ability for subjects of the seventh or eighth grade?

Definition of Terms

Reading - The comprehension of the printed word. Complete reading is said to involve four steps: recognition, understanding, reaction, and integration (Dechant, 1964). For the purposes of this study, the first three steps of Dechant's definition are accepted as basic to the processes assumed to be relevant to the cloze procedure and vowel deletion test.

Cloze Procedure - The systematic deletion of words from reading passages. The reader attempts to supply the missing words. Deletions may be structural: every nth word; or lexical: every nth word of a particular class. These omissions are replaced by equal-sized standard blanks.

Vowel Deletion Procedure - A variant of the whole-word cloze technique in which, instead of omitting whole words, only vowels are deleted. All vowels are replaced by a line.

Limitations of the Study

The following are limitations that are to be considered with regard to any conclusions which may be inferred from this study:

1. The sample population was drawn from students enrolled in a required reading course at the Terrill Junior High School in Scotch Plains, New Jersey. Any conclusions about the validity of the vowel deletion test cannot be generalized for populations of different grades or socioeconomic backgrounds.

2. One must be careful in interpreting the correlations of the present study, because even though the cloze procedure and vowel

deletion test were correlated with the Gates-MacGinitie as being given under the same circumstances, practical demands of using public school students necessitated that the experimenter not create the same set or atmosphere surrounding all three tests. In other words, the subjects were aware that the cloze procedure and the vowel deletion tests were experimental situations which would not be recorded on their permanent records. The Gates-MacGinitie, however, was realized to be the test of importance.

Overview of the Study

Chapter II will provide a review of the literature relevant to the cloze procedure and vowel deletion tests. In Chapter III, the methodology of the present study will be explained. This chapter will include the population of the study, a description of the tests and their administration, and an explanation of the statistical treatment of the data. In Chapter IV, the data will be presented and discussed. Chapter V will summarize the study and state any conclusions or suggestions for further research not previously touched upon.

CHAPTER II

REVIEW OF THE LITERATURE

THE CLOZE PROCEDURE

The cloze technique was used as early as 1897 by Ebbinghaus, but came into prominence in 1953 when Taylor used it to measure the readability of prose passages of varying difficulty. Since then, a considerable amount of research has been done which utilizes this technique for a variety of purposes. The name "cloze" is derived from the Gestalt theory of clozure, the human tendency to see incomplete structures in terms of complete patterns. To make the cloze responses or closures, the reader must have a grasp of the language structures on the page and an understanding of the substance and tone of the passage he is reading. Louthan (1965, p. 295) explains why cloze responses are possible: "Sophisticated readers do not inspect all words on a page with equal attention. Given a prose passage to read with care, one may or may not skip words or phrases, mav even ignore many of the morphological endings and many of the grammatical cues. But even if he reads every word on a page, he does not attend to them equally, does not devote equal thought to individual words." With this understanding of the reader in mind, it is more possible to recognize that the "cloze score appears to be a measure of the aggregate influences of all factors which interact to affect the degree of correspondence between the language patterns of transmitter and receiver." (Taylor, 1953, p. 432).

Cloze as a Measuring Instrument

Reading Skills. Research discussing the cloze procedure's ability to measure reading comprehension is relevant here because this study is investigating whether or not there is a significant correlation between the vowel deletion and cloze procedure tests. Since the cloze procedure is being used as one of the criteria to validate the vowel deletion test, it must be shown to be valid itself.

The term "general reading achievement" refers to reading skill as measured by standardized reading tests. Correlations between cloze tests and standardized reading tests establish the concurrent validity of cloze tests as measures of general reading achievement. Taylor (1956) suggested that the cloze method can be applied to the quantification of many different kinds of variables in the communication process, including general reading ability. Rankin (1959) correlated a structural cloze test with the Diagnostic Reading Test - Survey Section. He obtained correlations of .29 with Story Comprehension, .68 with Vocabulary, and .60 with Paragraph Comprehension. Jenkinson (1957), Fletcher (1959), and Ruddell (1963) obtained similar correlations using respectively the Cooperative Reading Test C-2, the Dvorak-Van Wagenen Diagnostic Examination of Silent Reading Abilities, and the Stanford Achievement Test. Unlike all other studies conducted on the subject was the finding of Weaver and Kingston (1963), that the correlation between cloze and the Davis Reading Test was low.

In a summary of the cloze research dealing with general reading achievement, Rankin (1965, p. 136) concluded that "with the exception of the Weaver and Kingston, all other comparisons between cloze tests and standardized reading tests have yielded substantial correlations even though the cloze tests were based upon a variety of different types of reading materials and were constructed and administered in different ways."

Specific reading comprehension has also been the object of much cloze research. The concurrent validity of the cloze procedure as a measure of specific reading comprehension is determined by correlating cloze test results with scores on comprehension tests covering the same material as the cloze test. Taylor (1957) tested the notion that an individual's cloze score based on mutilated samples of a technical article on the Air Force system of supply would be a dependable index of (1) how much of that article's content he knew before studying it, and (2) how much he would know after study. Standardized comprehension tests were correlated with the cloze and were found to support the idea that cloze scores are valid indices of the comprehensibility of English prose, at least for these subjects. Bormuth (1964) found that cloze tests can be used in the intermediate grades to predict scores on tests designed to measure several types of reading comprehension in literature, social studies, and science materials. His cloze tests predicted well the ability to score on such comprehension subtypes as vocabulary, understanding facts, seeing relationships, and drawing inferences. Bormuth also

showed that the intermediate grade teacher will find the cloze tests to be appropriate for use with individuals and groups which vary widely in comprehension ability.

The results of an experiment by Louthan (1965) indicated differences in the ability of children to answer comprehension questions subsequent to the presentation of reading material via the cloze procedure where different deletions were made according to specific grammatical class. Louthan found that when noun determiners are deleted, subjects score better on comprehension questions which follow than when no material is deleted.

In Weaver and Kingston's study in 1963, the conclusions drawn were unlike the above author's. The major implication was that "cloze tests of varied kinds are much more related to each other than to the other two factors isolated by this analysis, verbal comprehension and rote memory." (Weaver and Kingston, 1963, p. 261). This study seemed to be the only dissenter in the literature relating cloze and specific reading comprehension.

Cloze and Mental Abilities. One of the questions investigated in this study is whether or not there is a relationship between the vowel deletion test and intellectual level. In order to establish the validity of the vowel deletion test, the validity of the criterion test (cloze procedure) must be shown. Therefore, research on the relationship between the cloze test and mental ability would be pertinent to this study.

Hafner (1964) found that in his sample of college seniors, the

poorer readers (as measured by cloze) were less rapid workers on the cloze task, less intelligent, and less able to reason well than better readers. The results of Taylor's 1957 study showed highly significant and positive coefficients (from .46 to .74) between the Armed Forces Qualification Test (AFQT) indices and varieties of cloze scores.

In a summary of the research concerning the relationship between cognitive abilities and cloze, Hafner (1966, p. 147) suggests that "teachers desiring an easy-to-administer, inexpensive, rough estimate of the intelligence rankings of young adults may find cloze tests useful."

Methodological Considerations

The cloze procedure has been used previously with age groups ranging from fourth grade to adults. The great majority of the studies have used college-age students as subjects (Taylor, 1957; Weaver and Kingston, 1963; etc.). However, enough studies have been done with the upper elementary and junior high school grades (Louthan, 1965; Bormuth, 1963; Roosinck, 1962; Ruddell, 1963) to justify confidence in the use of the cloze procedure for children "at least in the upper elementary school age bracket." (Rankin, 1965, p. 143).

The question of cloze test length must be determined in terms of practical considerations of time, student fatigue, and also how much test reliability is needed for a given purpose. The mechanical selection of words for deletion in the cloze procedure tends to pro-

duce a sizeable number of nondiscriminating items which lower reliability. Consequently, cloze tests must be fairly long. Taylor's (1956, p. 48) comment on this gives the test constructor a consistent rule to follow: "A series of about fifty blanks is roughly sufficient to allow the chances of mechanically selecting easy or hard words to cancel out and yield a stable score of the difficulty of a passage, or the performance of an individual, despite what specific words the counting-out process may delete."

Cloze tests can be constructed by deleting words without respect to grammatical form (structural deletions) or by limiting deletions to certain types of words (lexical deletions). Taylor (1957) studied correlations of three types of cloze tests formed by deleting any-words, easy-words (i.e., conjunctions, pronouns, articles, and verb auxiliaries), and hard-words (i.e., nouns, verbs, adverbs). He found significant correlations between all three types of cloze tests and criterion tests of pre-reading knowledge, immediate recall, and aptitude, but the easy-word correlations were the smallest. He concluded that for purposes of testing comprehension, aptitude, and readability, the any-word form was superior. In an earlier study by Taylor (1953), the rationale for using structural deletions is given: "An attempt to restrict a counting-out system to 'important' words (nouns and verbs, for example, as against articles and conjunctions) may find that one of two equally long passages contains twice as many 'importants' as the other! ... Because the effect of such a difference needs to be included in--not excluded from--the

results, it seems necessary to let the occurrences of presumably important words be represented proportionately in deletions." (Taylor, 1953, p. 420).

Louthan (1965) used the cloze procedure to determine the contributions to meaning of certain kinds of words and the relative difficulty of the reading matter in a prose passage. He found that the control comprehension exercise scores were superior to those of Type One (random deletions), Type Two (noun deletions), Type Three (specific verb deletions), and Type Four (modifier deletions). These last three classes, then, are the basic meaning carriers of the written material; when one word in ten is deleted and all words are of one of these grammatical classes, there is a marked loss in comprehension. On the other hand, if prepositions, conjunctions, or pronoun substantives are deleted, there is no appreciable difference between the performances on tests following the cloze materials and those following unmutilated passages. Differentiating structural from lexical deletions, Weaver and Kingston (1963) state that structural deletions correlate significantly more highly with vocabulary and reading comprehension sections of the Diagnostic Reading Test than do lexical deletions; lexical deletions correlate significantly more highly with the story comprehension section of the DRT than do structural deletions. Taylor's (1956) advice on this subject seems to be appropriate: "There seems to be little advantage in preclassifying words and limiting deletions to them."

It is possible to score cloze tests by a strictly objective

procedure in which credit is given only if the exact word is replaced in the blank space. A more subjective procedure can also be used in which credit is given for synonyms. The subjective scoring technique is much more laborious. It is a question of practical importance to determine which method should be used for measurement purposes. In Taylor's initial study of 1953, he indicated that the more tedious method of judging synonyms as "good enough" to be allocated half-counts yielded slightly larger total scores for the passages, but the degree of differentiation was virtually identical to scoring only precise matches. Ruddell (1963) found validity coefficients to be about the same when based on tests graded by both scoring systems. He found no significant differences in test reliability or validity for the two scoring systems. These investigations support the conclusion that for measurement purposes, the more tedious and subjective procedure of giving credit for synonyms is not worthwhile.

The cloze procedure is a psychological tool for measuring the effectiveness of communication (Taylor, 1953). It spreads before the subject "a language sequence in a relatively normal form. At some points in the sequence, however, rather than a sign to recognize and match, there is a gap in the sequence. Where most reading input supplies a certain, direct cue to the matching mechanisms of the organism, the cloze procedure requires an analysis, a search, of a distribution of probable elements in order to arrive at a 'most likely' one in the light of the reduced cues which are presented." (Weaver, 1965, p. 131).

THE VOWEL DELETION PROCEDURE

There seems to be no study in the present literature which uses the vowel deletion test as a measure of reading comprehension. However, there are a number of studies which utilize vowel deletion for other purposes, and in so using it give valuable information for this study. Having a direct bearing is Fry's (1968) work in which he discusses the relative importance of vowels and consonants. One of the objectives of the experiment was to "examine the extent to which children can read English without vowel symbols." (Fry, 1968, p. 4). Fry compared the oral reading of a vowel-deleted passage with the same passage from which all of the consonants had been omitted. He found that words with consonants only were much easier to read than words with vowels only.

Redundancy and its effects on the vowel deletion test are particularly appropriate to the discussion of the moment. Several authors have investigated systematically some of the practical consequences of redundancy in English text. Chapanis (1954) attempted to discover how well a heterogeneous sample of subjects could reconstruct English text when various amounts of it had been deleted. A secondary objective of the research was to relate the ability to reconstruct such abbreviated passages to general intelligence and other qualities similar to reading ability. Chapanis demonstrated that the "ability to reconstruct abbreviated English passages is highly correlated with a person's general familiarity with the English language, and that both of these are correlated with general

mental ability as measured by a verbal intelligence test." (Chapanis, 1954, p. 506).

In another study probing the problems of the redundancy of English text, Miller and Friedman (1957) attempted to discover the effects of different kinds of mutilation upon the ability to reconstruct damaged copy and also the amount of redundancy that could be eliminated without modifying the basic rules of English orthography. The authors found that the average person, given limited time to work, will not be able to correct passages perfectly if more than ten percent of the characters are mutilated; reconstruction is hardest if the mutilation consists of random substitutions of erroneous characters. With superior persons and unlimited time, however, it is possible to abbreviate passages as much as fifty percent, either by omitting alternate characters or by omitting all the vowels and the space between words.

Shannon (1951) described a new method of estimating the entropy and redundancy of a language. This method exploited the fact that anyone speaking a language possesses implicitly an enormous knowledge of the statistics of the language. Familiarity with the words, idioms, cliches, and grammar enables him to fill in missing or incorrect letters in proofreading, or to complete an unfinished phrase in conversation. Shannon demonstrated the predictability of English by the following procedure: he instructed the experimenter to "select a short passage unfamiliar to the person who is to do the predicting. He is then asked to guess the first letter in the pas-

sage. If the guess is correct, he is so informed, and proceeds to guess the second letter. If not, he is told the correct first letter and proceeds to his next guess. This is continued through the text." (Shannon, 1951, p. 54). In a typical experiment of this type, 69 percent of the letters were guessed correctly. Predictably, the errors occurred most frequently at the beginning of words and syllables where the line of thought has more possibility of branching out. Prediction of the text gradually improved with increasing knowledge of the past. This was indicated by the larger numbers of correct first guesses and smaller numbers of high rank guesses.

A study by Emans and Fisher (1967) also is relevant to the present research on vowel deletions. The purpose of their work was to develop a series of exercises for teaching the use of context clues in word recognition. This study is different from the others cited here in that its objective is the teaching, not measurement of a specific skill. The authors tried to establish the relative difficulty of six techniques of using context clues: Form 1 - multiple choice of omitted word; Form 2 - first and last letters of each word were given with the others omitted; Form 3 - just the beginning letter; Form 4 - only vowels were omitted; Form 5 - complete word omitted and the line for each missing word was the same length; and Form 6 - the entire word was omitted but the length of the line was determined by the length of the word. Form 4 seems to be a variation of the vowel deletion test. Form 5 is the cloze procedure; and Form 6 is a variation of it. The results indicate that, in general, the

more clues a reader has, the easier it is to unlock an unknown word. In Form 4, where only the vowels were omitted, the subject was given phonetic and configuration clues, as well as context clues, to aid him in determining the correct response. This was the easiest form of the test. Form 5, however, which was the hardest form of the test, provided the subject with no clues at all other than context. Emans and Fisher's findings seem to suggest that subjects in the present study will get higher scores on the vowel deletion passage than on the cloze.

One other precedent for the deletion of vowels from a reading passage is the Hebrew language. Hebrew does not delete vowels as a measure of reading comprehension. The vowels in Hebrew are used only until a student has learned the written language. They are, in effect, a crutch which facilitates the learning of the patterns of the language, which is a most highly regular one. After the written language has been sufficiently mastered, the vowels are no longer necessary. Thus, it can be seen that even in a language other than English, the consonants seem to be the major carriers of information.

There have been only a small number of researchers who have used vowel-deleted passages in their studies. The purpose of Fry's (1968) study was to weigh the importance of vowels and consonants as related to the teaching of phonics to children. Chapanis (1954) was interested in exploring the practical consequences of redundancy in English text. Emans and Fisher (1967) aimed at developing a series of exercises for teaching the use of context clues in word recogni-

tion. Miller and Friedman (1957) concerned themselves with the effects of different kinds of mutilations upon the ability to reconstruct damaged copy. All of these studies utilize vowel deletion passages, but none attempts to use them either as a measure of reading comprehension or of intellectual ability.

CHAPTER III

PROCEDURE

It was the purpose of this study to establish concurrent validity for the vowel deletion test by administering it and the cloze procedure passage, and correlating these with the Wechsler Intelligence Scale for Children and the Gates-MacGinitie Reading Test. Questions under investigation were: (1) Does a relationship exist between the performance on a short passage of vowel deletion on the reading grade level of the student and (a) the cloze procedure (b) a standardized reading test (c) the intellectual level (as measured by IQ)? (2) Will the performance on the vowel deletion passage correlate more with reading ability for subjects of the seventh or eighth grade?

Subjects

Subjects used in this study were students of the Terrill Junior High School in Scotch Plains, New Jersey, and were from a predominantly white middle and upper middle class background. Three sections of the seventh grade and three sections of the eighth grade minus those who were absent for any of the testing periods were used. In each grade, one class with above average reading ability, one class with average reading ability, and one class with below average reading ability were selected.

At the beginning of the study, there were 144 students participating: 76 in the eighth grade and 68 in the seventh grade. The data

from 27 students were not used in the final statistics because they were incomplete: one student transferred from the school in the middle of the study, three students were new to the district and did not have IQ scores as yet, nine students were absent for the administration of the standardized reading test, twelve students were absent for the administration of the cloze passage, and two students were absent for the administration of the vowel deletion test. The total number of students who were present for all the tests and who had been in the public school system long enough to have IQ scores available was 117. Of these, 57 were in the seventh grade and 60 were in the eighth grade. Of the total number of students, 56 were male and 61 were female.

Description of Tests

Four passages on mountain climbing were selected and rated according to the Readability Graph (Fry, 1967): two on seventh grade level and two on eighth grade reading level. The two seventh grade passages (one to be used for the vowel deletion passage, the other for the cloze) were taken from the Allyn and Bacon seventh grade basal reader High Trails. The two eighth grade passages were taken from the Allyn and Bacon eighth grade basal reader Widening Views. (See Appendix C.) For each grade, in the passages used for vowel deletion, all vowels were taken out and replaced by a line. The seventh grade passage was exactly 54 words long; the eighth grade passage was exactly 56 words long. In the passages used for the cloze test, every seventh word was deleted and replaced by lines of

equal length. The seventh grade passage was exactly 355 words long; the eighth grade passage was 357 words long.

There was a short cloze sample of 55 words and 49 words for the seventh and eighth grade passages, respectively. The vowel deletion samples were nine words long for the seventh grade and twelve words for the eighth grade. The samples for the seventh grade were on a seventh grade readability level; and the samples for the eighth grade were on an eighth grade readability level.

Administration of Tests

All of the subjects had been given the Wechsler Intelligence Scale for Children (WISC) prior to this study (when the students were in the fifth grade) which had been routinely administered by the public school. This test took approximately one hour to administer to each individual student.

The standardized reading scores used in this study are from the Gates-MacGinitie Reading Test Survey E for grades 7-9, also routinely administered by the school during the week immediately following the termination of this study. This test took approximately two and a half hours to administer.

The directions for the vowel deletion and cloze tests (see Appendix C) were read aloud to the class by the experimenter. The subjects were then given the sample passage to work on. After five minutes, the sample passage was read aloud so the subjects could correct their own papers. If there were no questions, the subjects were told to proceed with the test. For the cloze test, the maximum

time allowed was forty minutes. Most of the subjects finished in approximately 25 minutes. For the vowel deletion test, the maximum time was 25 minutes. Most subjects finished in approximately 15 minutes. The cloze and vowel deletion tests were given at least three days apart. All testing and scoring was done by this writer; the testing period spanned eight school days.

Treatment of Data

According to G. M. Smith (1962), "it is customary to consider a test valid if a high correlation is found between the test and satisfactory criterion." Therefore, this study utilized the Pearson Product Moment Correlation. Performance on both the vowel deletion and cloze tests, based on percentage of correct answers, were then correlated with (1) each other, (2) the standard scores of the four sections of the Gates-MacGinitie Reading Test: Speed, Accuracy, Vocabulary, and Comprehension, and (3) the WISC scores: Verbal, Performance, and Full Scale.

Percent scores for the vowel deletion and cloze passages were used so that both individual and mean scores could be directly compared. Standard scores were utilized for the Gates-MacGinitie Test because of that test manual's warning that the use of raw or percent scores for any comparisons would yield invalid results. Only the standard scores are on an equal-interval scale. The WISC intelligence quotients were used because they were the only scores available to the experimenter.

This treatment of the data led to the findings as stated and

discussed in Chapter IV.

CHAPTER IV

FINDINGS AND DISCUSSION

In general, a moderate correlation was found between vowel deletion and all other measures of reading comprehension and intellectual ability.

Major Correlation Findings

There is a significant and moderate relationship between the vowel deletion and cloze score when these are both on the student's reading grade level. The correlation for the total group of seventh and eighth grade students was .43. (See Table 1.)

The performance on a vowel deletion passage correlated at a significant level with the standardized reading test as well as or better than the cloze for the Gates sections of Speed (.51), Accuracy (.63), and Vocabulary (.57). The correlation between cloze and the Comprehension section of the Gates test (.60) was slightly higher than that for the vowel deletion test (.51).

The correlations between intellectual level and performance on the vowel deletion test were moderately high and significant. For the total group, the correlation between vowel deletion and Full Scale IQ was .45. The correlation with Verbal was .37; with Performance the correlation was .39.

The performance on the vowel deletion passage correlated more highly with reading ability for the eighth grade subjects on the Gates sections of Speed (.60), Accuracy (.72), and Vocabulary (.59) than

Table 1

Correlations of Vowel Deletion
and Cloze Scores with Each Other, IQ, and
Standardized Reading Scores for All Students
(N = 117)

Measure	V.D.	C.P.
Vowel Deletion	---	.43*
Cloze Procedure	.43*	---
Verbal (WISC)	.37*	.50*
Performance (WISC)	.39*	.28*
Full Scale (WISC)	.45*	.46*
Speed (Gates)	.51*	.29*
Accuracy (Gates)	.63*	.41*
Vocabulary (Gates)	.57*	.55*
Comprehension (Gates)	.51*	.60*

* $p < .01$

for the seventh grade subjects. The correlation between Comprehension and vowel deletion, however, was slightly higher for the seventh grade subjects (.55 versus .49). (See Table 2.)

In comparing the vowel deletion correlations with the various criterion measures to those of the cloze, Table 1 shows that for all measures except Verbal IQ and Comprehension, the vowel deletion correlations are higher than or almost identical to the cloze correlations, for the total population. The correlation between vowel deletion and Accuracy was the highest at .63. The correlations between cloze and Verbal IQ (.50) and between cloze and Comprehension (.60) were slightly higher than the corresponding vowel deletion results.

The correlations for the subgroups of this study generally followed the same pattern of results. In comparing the vowel deletion and cloze correlations, all groups tended to have very similar correlations with Full Scale IQ. Correlations with Accuracy and Vocabulary were generally higher for the vowel deletion. Correlations between cloze and Comprehension, on the other hand, were generally higher than for the vowel deletion. The correlations to support these findings are in Table 2.

Minor Correlation Findings

For the total population, the correlation between Comprehension and Full Scale IQ was the highest of the Gates subtests at .67. A similar correlation of .63 was found between Vocabulary and Full Scale IQ. The correlation between Accuracy and Full Scale IQ was

Table 2

Correlations of Vowel Deletion and Cloze Scores with Each Other, IQ, and Standardized Reading Scores for Male and Female 7th Grade Students (N = 57), Male and Female 8th Grade Students (N = 60), 7th and 8th Grade Male Students (N = 56), and 7th and 8th Grade Female Students (N = 61)

Measure	Groups							
	7th		8th		Male		Female	
	V.D.	C.P.	V.D.	C.P.	V.D.	C.P.	V.D.	C.P.
Vowel Deletion	---	.54*	---	.43*	---	.35*	---	.54*
Cloze	.54*	---	.43*	---	.35*	---	.54*	---
Verbal (WISC)	.45*	.63*	.31*	.47*	.47*	.51*	.32*	.51*
Performance (WISC)	.35*	.22**	.41*	.40*	.27**	.19	.53*	.36*
Full Scale (WISC)	.48*	.51*	.43*	.50*	.44*	.42*	.52*	.51*
Speed (Gates)	.39*	.45*	.60*	.53*	.55*	.38*	.28**	.13
Accuracy (Gates)	.54*	.68*	.72*	.59*	.65*	.43*	.47*	.38*
Vocabulary (Gates)	.52*	.63*	.59*	.55*	.54*	.48*	.60*	.62*
Comprehension (Gates)	.55*	.70*	.49*	.60*	.46*	.59*	.58*	.60*

* $p < .01$ **$p < .05$

.57; while between Speed and Full Scale IQ it was .47. The correlations between the various sections of the Gates test ranged from .51 (between Speed and Comprehension) to .86 (between Speed and Accuracy). The correlations between the subscores of the WISC ranged from .43 (between Verbal and Performance) to .85 (between Performance and Full Scale). (See Appendix A for Correlation Matrix.)

Mean Findings

The mean scores for all of the criterion measures used in this study proved the population to be above average. On the WISC, which has a mean of 100, and a standard deviation of 15, the total group's mean scores are almost one standard deviation above the mean. These data can be found in Table 3. Comparing the males with the females, and the seventh with the eighth grade students, their mean IQ scores are practically the same. These data are found in Table 4.

The total group's mean scores on the Gates-MacGinitie Reading Test are also above average. With a mean of 50 and a standard deviation of 10, the total population's mean score is about one and a half standard deviations above the mean in Vocabulary and Comprehension. The seventh and eighth grade students' mean scores are practically the same for all subtests. The females scored slightly better on Speed and Accuracy, but virtually the same on Vocabulary and Comprehension sections.

The mean percent scores for all groups were uniformly higher for the vowel deletion test than for the cloze. For these two tests, the females again scored slightly higher than the males. In compar-

Table 3

Means of Variables and Standard Deviations

for all Students

(N = 117)

Variable	Unit of Measurement	Mean	S.D.
Vowel Deletion	Percent Correct	88	10.6
Cloze	Percent Correct	47	12.3
Verbal (WISC)	IQ	113	11.0
Performance (WISC)	IQ	109	12.7
Full Scale (WISC)	IQ	112	10.9
Speed (Gates)	$\bar{z}_{50}$	64	8.6
Accuracy (Gates)	$\bar{z}_{50}$	65	9.8
Vocabulary (Gates)	$\bar{z}_{50}$	55	9.2
Comprehension (Gates)	$\bar{z}_{50}$	56	10.0

Table 4

Means of Variables for Male and Female 7th Grade Students (N = 60), 7th and 8th Grade Male Students (N = 56), and 7th and 8th Grade Female Students (N = 61)

Variable	Unit of Measurement	Mean			
		7th	8th	M	F
Vowel Deletion	Percent Correct	87	89	85	91
Cloze	Percent Correct	40	54	46	49
Verbal (WISC)	IQ	112	114	114	113
Performance (WISC)	IQ	108	110	108	110
Full Scale (WISC)	IQ	111	114	112	113
Speed (Gates)	ǂ	65	63	61	66
Accuracy (Gates)	ǂ	67	64	62	69
Vocabulary (Gates)	ǂ	54	57	54	56
Comprehension (Gates)	ǂ	55	56	55	57

ing the eighth grade students to the seventh grade students, the former group scored about the same on the vowel deletion, but much better on the cloze.

DISCUSSION

Cloze and Reading Comprehension

The findings of this study seem to agree quite strongly with previous research. The cloze correlations with the standardized reading test in this study are as high as those that Rankin (1959) obtained when he correlated the cloze with the Diagnostic Reading Test (from .29 to .68). The present cloze correlations also agree with Jenkinson (1957), Fletcher (1959), and Ruddell (1963), who all got moderately high positive correlations between cloze and standardized reading tests.

However, the present study disagrees with the one major dissenting study in the literature relating cloze and reading comprehension. The Weaver and Kingston study in 1963 concluded that different types of cloze tests are more related to each other than to factors involving general reading comprehension. For all groups of this study, however, the correlations between vowel deletion and cloze are uniformly lower than those between these two tests and the subscores of the Gates-MacGinitie Reading Test: Accuracy, Vocabulary, and Comprehension. While this finding disagrees with Weaver and Kingston, it concurs with the majority of cloze research.

Cloze and IQ

Taylor's 1957 study showed highly significant and positive

correlation coefficients (from .46 to .74) between an Air Force IQ test and cloze scores. The general opinion of researchers relating IQ and cloze is that the correlations generated are not as high as for reading comprehension, but that the cloze does provide a rough estimate of intellectual functioning. The results of this study uphold that idea. The correlations between cloze and Full Scale IQ in this study ranged from .42 to .51 and were in general not as high as the correlations between cloze and the standardized reading scores.

Vowel Deletion, Reading Comprehension, and IQ

In the literature concerning the vowel deletion test's relationship to reading and intellectual ability, Chapanis (1954) concluded that there is a high correlation between the ability to reconstruct abbreviated English passages and a person's general familiarity with the English language and general mental ability. In the present study, correlations between vowel deletion and IQ were significant, highly positive, and virtually identical to those between IQ and cloze. Correlations between vowel deletion and reading scores were also significant and highly positive, and with the exception of the Comprehension subscore, were generally higher than the cloze correlations with the same test.

One interesting finding of the present study is that the mean scores of the vowel deletion test (see Tables 3, 4) are significantly higher for all groups than the cloze. This fact agrees with the experiment done by Emans and Fisher (1967), where they suggest that vowel deletion passages are easier for the student than cloze. This

has important practical implications to the advantage of the vowel deletion test. If it is easier, it would seem to be more pleasant for the student to take; this would benefit both student and teacher.

One thing that cannot be overlooked as a result of this and the Emans and Fisher study is that the vowel deletion test may be too easy. In the present study, the mean score on the vowel deletion test was 88 for the total group and about the same for all other groups (see Tables 3,4). With a standard deviation of 10.6 for the total group, the test comes close to having too low a ceiling. The Emans and Fisher study partially explains this result. The deletion of all vowels from a passage gives the subjects a significantly greater amount of context clues to work with than does the cloze test. Therefore, it should be expected that most subjects will accurately fill in a higher percentage of blanks on the vowel deletion test.

Other Factors

Certain factors which seem to have influenced the outcome of this study are relevant to touch upon at this point. It is well-known that in most testsof reading ability, females tend to do slightly better than males; this study is no exception. While the mean IQ scores are practically the same, the females' scores on the Gates-MacGinitie Test, the vowel deletion, and the cloze scores are slightly higher. It would also seem, from a general knowledge that reading ability tends to improve as one gets older (up to a point), that this study is no exception to this theory either. With the

exception of the Speed and Accuracy subsections of the Gates, the eighth grade students tended to have slightly higher mean scores on all of the standardized reading tests, the vowel deletion, and cloze.

Tables 1 and 2 show this study's highest correlations between Accuracy and vowel deletion (from .47 to .72). For all groups except the females (the seventh grade group correlations are almost identical), these correlations are higher than those between vowel deletion and Vocabulary and Comprehension. At first glance, this might be a curious finding of the present study, but upon looking carefully at the Accuracy section of the Gates test (see Appendix D), one finds it to be a reading comprehension task which relies mainly on context clues. In order to complete the vowel deletion test, one also needs to rely heavily on context clues.

As one final basis of comparison, the correlations obtained between the criterion measures themselves are useful. For the total population, the correlation between Full Scale IQ and Comprehension was .67. This is a higher correlation than for either the vowel deletion or cloze. The correlations between the subtests of the Gates test ranged from .51 to .86. The correlations between vowel deletion and the Gates subtests ranged from .51 to .63; the correlations between cloze and the Gates subtests ranged from .29 to .60. In summary, then, the correlations between the various criterion measures were generally higher than those between the criterion measures and the vowel deletion and cloze passages.

CHAPTER V

SUMMARY AND SUGGESTIONS

Summary

The major purpose of this study was the development and validation of a new measure of reading ability--the vowel deletion test. This test is actually a variation of the cloze procedure. Instead of deleting every nth word, as in the latter test, every vowel is deleted. The vowel deletion test seems to have pragmatic advantages over its predecessor, and also over standardized reading tests. Unlike standardized reading tests, both the vowel deletion and the cloze can be teacher-constructed and teacher-graded; they also take up less class time than standardized tests.

In trying to validate the vowel deletion test, the following questions were investigated in the present study: (1) Does a relationship exist between the performance on a short passage of vowel deletion on the reading grade level of the student and (a) the cloze procedure, (b) a standardized reading test, and (c) the intellectual level (as measured by IQ)? (2) Will the performance on the vowel deletion passage correlate more with reading ability for subjects of the seventh or eighth grade?

The passages used in the vowel deletion and cloze tests were taken from the Allyn and Bacon seventh and eighth grade basal readers. The cloze passages were approximately 350 words long. Every seventh word was deleted, so that there were 50 response blanks.

The vowel deletion passages were approximately 55 words long. Every vowel was deleted, so that there were about 95 response blanks. Passages to be used were checked for readability using the Fry Readability Formula, so that seventh graders worked on passages of a seventh grade readability level, and eighth graders worked on passages of an eighth grade readability level.

Subjects used in the study were students at the Terrill Junior High School in Scotch Plains, New Jersey. In each grade, three reading classes were tested: one class with above the school's average reading ability, one class with average reading ability, and one class with below average reading ability. The other tests used as variables in this study were the WISC, which had been previously administered by the school system at the end of the students' fifth grade year, and the Gates-MacGinitie Reading Test Survey E for Grades 7-9, which was administered to the students during the week following the termination of this study.

The results, utilizing the Pearson Product Moment Correlation as the appropriate statistical procedure, were as follows:

There was a significant and moderate relationship between the vowel deletion and cloze score when these are both on the student's reading grade level. The correlation for the total group was .43.

The performance on the vowel deletion passage correlated with the standardized reading test as well as or better than the cloze for the Gates sections of Speed, Accuracy, and Vocabulary for the total group. With respect to the correlations with Comprehension, the

cloze correlated more highly.

The correlations between intellectual level and performance on the vowel deletion test were moderately high and significant. The total group's correlation between vowel deletion and Full Scale IQ was .45.

The performance on the vowel deletion passage correlated more highly with reading ability for the eighth grade subjects on the Gates sections of Speed, Accuracy, and Vocabulary than for the seventh grade subjects. The correlation between Comprehension and vowel deletion, however, was slightly higher for the seventh grade subjects.

The findings with regard to the moderately high and significant correlations between vowel deletion and reading ability were in agreement with the limited amount of vowel deletion literature available. Because of the scarcity of research in this area, these positive findings merit further investigation.

Conclusions Regarding Hypotheses

Following are the results of the questions under investigation:

There was a significant and moderate relationship between the vowel deletion and cloze score when these are both on the reading grade level of the student. The correlations ranged from .35 to .54. The male group's correlation was the lowest; the seventh grade and female groups' correlations were the highest. The correlation for the total group was .43.

The performance on the vowel deletion passage correlated with

the standardized reading test as well as or better than the cloze for the Gates-MacGinitie sections of Speed (.51 versus .29), Accuracy (.63 versus .41), and Vocabulary (.57 versus .55) for the total group. This was also true for the males, the females, and the eighth grade group. With respect to the correlations with Comprehension, the cloze correlated more highly (.60 versus .51). This seems to indicate that the vowel deletion does as good a job of measuring reading ability as the cloze.

The correlations between intellectual level and performance on the vowel deletion test were moderately high and significant, ranging from .43 to .52. The correlation between Full Scale IQ and vowel deletion was .45 for the total group.

The performance on the vowel deletion passage correlated more highly for reading ability for the eighth grade subjects on the Gates subscores of Speed (.60 versus .39), Accuracy (.72 versus .54), and Vocabulary (.59 versus .52) than for the seventh grade students. The correlation between Comprehension and vowel deletion (.55 versus .49), however, was slightly higher for the seventh grade subjects. These results indicate that the vowel deletion test accurately reflects the improvement in reading ability usually found as students ascend in grade level.

Suggestions for Further Research

Attempts to validate the vowel deletion passage for different age groups and socioeconomic background would be of value in further determining the usefulness of the vowel deletion test as a measure of

reading comprehension.

Investigations of further variations of cloze might yield interesting and valuable results. Deletions of accented or unaccented vowels, or syllables from words, are some examples.

Another method of further validation of the vowel deletion test might be to change the readability level of the passage while keeping the grade of the subjects constant to see exactly what effect the readability of the passage might have upon the subjects' performance. This might also help to establish a higher ceiling for the vowel deletion test.

BIBLIOGRAPHY

Bloomer, R. H. The cloze procedure as a remedial reading exercise. Journal of Developmental Reading, 5:173-181, Spring, 1962.

Bormuth, J. R. Cloze as a measure of readability. International Reading Association Conference Proceedings, New York: Scholastic Magazines, 8:131-134, 1963.

Bormuth, J. R. Experimental applications of cloze tests. International Reading Association Conference Proceedings, Newark, Delaware: International Reading Association, 9:1964.

Brooks, S. T. Effects of locus of control and anxiety on the ability of mentally retarded children to use context clues in reading. Unpublished doctoral dissertation, George Peabody College for Teachers, 1962.

Chapanis, A. The reconstruction of abbreviated printed messages. Journal of Experimental Psychology, 1954, 48, 496-510.

Dechant, V. Improving the teaching of reading. Englewood Cliffs, New Jersey: Prentice-Hall, 1964.

Emans, R., and Fisher, G. M. Teaching the use of context clues. Elementary English, March, 1967, 243-246.

Fletcher, J. E. A study of the relationships between ability to use context as an aid in reading and other verbal abilities. Unpublished doctoral dissertation, University of Washington, 1959.

Fry, E. A readability formula that saves time. New Brunswick, N. J., 1967 (Mimeographed).

Fry, E. Reading words with vowels missing and with consonants missing. Technical Report #1. Cambridge: Harvard Computing Center, August, 1968, 1-9.

Hafner, L. E. Relationships of various measures to the "cloze." In E. L. Thurston and L. E. Hafner (Eds.) Thirteenth Yearbook of the National Reading Conference. Milwaukee: The National Reading Conference, Inc., 1964, 135-145.

Hafner, L. E. Implications of cloze. In E. L. Thurston and L. E. Hafner (Eds.) Fourteenth Yearbook of the National Reading Conference. Milwaukee: National Reading Conference, 1965, 151-158.

Hafner, L. E. Cloze procedure. Journal of Reading, May, 1966, 415-421.

Heitzman, A. J., and Bloomer, R. H. The effect of non-overt reinforced cloze procedure on reading comprehension. Journal of Reading, 1967, 11, 213-223.

Jenkinson, M. E. Selected processes and difficulties in reading comprehension. Unpublished doctoral dissertation, University of Chicago, 1957.

Louthan, V. Some systematic grammatical deletions and their effects on reading comprehension. English Journal, 1965, 54, 295-299.

Miller, G. A., and Friedman, E. A. The reconstruction of mutilated English texts. Information and Control, 1957, 1, 38-55.

Rankin, E. F. Uses of the cloze procedure in the reading clinic. In J. A. Figurel (Ed.) International Reading Association

Conference Proceedings, New York: Scholastic Magazines, 4, 228-232, 1959.

Rankin, E. F. The cloze procedure - a survey of research. In E. L. Thurston and L. E. Hafner (Eds.) Fourteenth Yearbook of the National Reading Conference. Milwaukee: National Reading Conference, 1965, 133-150.

Roossinck, P. L. A method for improving reading comprehension. M. A. thesis, The University of Maryland, 1962.

Ruddell, R. B. An investigation of the effect of the similarity of oral and written patterns of language structure on reading comprehension. Unpublished doctoral dissertation, Indiana University, 1963.

Shannon, E. C. Prediction and entropy of printed English. The Bell System Technical Journal, 1951, 8, 50-64.

Smith, G. M. A simplified guide to statistics (third edition) New York: Holt, Rinehart & Winston, Inc., 1962.

Taylor, W. L. "Cloze procedure": A new tool for measuring readability. Journalism Quarterly, 1953, 30, 415-433.

Taylor, W. L. Recent developments in the use of the "cloze procedure." Journalism Quarterly, 1956, 33, 42-48, 99.

Taylor, W. L. "Cloze" readability scores as indices of individual differences in comprehension and aptitude. Journal of Applied Psychology, 1957, 41, 19-26.

Weaver, W. W., and Kingston, A. J. A factor analysis of the cloze procedure and other measures of reading and language ability.

Journal of Communication, 1963, 13, 251-261.

Weaver, W. W. Theoretical aspects of the cloze procedure. In E. L. Thurston and L. E. Hafner (Eds.) Fourteenth Yearbook of the National Reading Conference. Milwaukee: National Reading Conference, 1965, 115-132.

APPENDIX A

CORRELATION MATRIX

CORRELATION MATRIX FOR ALL STUDENTS

IN GRADES SEVEN AND EIGHT

(N = 117)

Variable #	1	2	3	4	5	6	7	8	9
1 Vowel Deletion	---	.43	.37	.39	.45	.51	.63	.57	.51
2 Cloze	.43	---	.50	.28	.46	.29	.41	.54	.60
3 Verbal (WISC)	.37	.50	---	.43	.84	.45	.53	.65	.66
4 Performance (WISC)	.39	.28	.43	---	.85	.35	.45	.41	.46
5 Full Scale (WISC)	.45	.46	.84	.85	---	.47	.57	.63	.67
6 Speed (Gates)	.51	.29	.45	.35	.47	---	.86	.57	.51
7 Accuracy (Gates)	.63	.41	.53	.45	.57	.86	---	.66	.68
8 Vocabulary (Gates)	.57	.55	.65	.41	.63	.57	.66	---	.73
9 Comprehension (Gates)	.51	.60	.66	.46	.67	.51	.68	.73	---

APPENDIX B

RAW SCORES

RAW SCORES OF SEVENTH GRADE STUDENTS ON

THE VOWEL DELETION AND CLOZE PROCEDURE TEST

(N = 57)

Student Number	Vowel Deletion	Cloze	Student Number	Vowel Deletion	Cloze	Student Number	Vowel Deletion	Cloze
61	76	21	81	90	26	101	81	18
62	81	26	82	73	22	102	86	14
63	90	24	83	75	12	103	80	22
64	81	15	84	55	09	104	87	19
65	77	15	85	84	31	105	70	13
66	85	19	86	92	23	106	80	20
67	80	12	87	92	28	107	75	18
68	84	16	88	87	08	108	78	14
69	92	23	89	75	16	109	87	22
70	82	22	90	69	25	110	89	28
71	81	21	91	92	26	111	90	23
72	76	29	92	74	27	112	89	21
73	66	17	93	73	20	113	71	13
74	90	24	94	79	16	114	85	20
75	93	15	95	92	24	115	87	22
76	67	14	96	87	27	116	86	26
77	93	31	97	62	16	117	74	15
78	78	29	98	66	08			
79	74	11	99	80	26			
80	76	24	100	90	23			

RAW SCORES OF EIGHTH GRADE STUDENTS ON

THE VOWEL DELETION AND CLOZE PROCEDURE TEST

(N = 60)

Student Number	Vowel Deletion	Cloze	Student Number	Vowel Deletion	Cloze	Student Number	Vowel Deletion	Cloze
1	78	26	21	83	24	41	82	26
2	85	24	22	56	22	42	89	29
3	93	25	23	75	27	43	95	30
4	60	24	24	95	28	44	93	25
5	77	33	25	80	31	45	97	32
6	91	28	26	99	24	46	72	19
7	89	27	27	86	21	47	96	37
8	75	28	28	75	26	48	54	19
9	96	32	29	69	20	49	72	20
10	64	30	20	96	24	50	92	29
11	88	33	31	97	29	51	96	28
12	83	29	32	91	20	52	85	34
13	91	24	33	93	34	53	81	28
14	94	23	34	97	26	54	96	30
15	85	27	35	75	20	55	97	30
16	84	26	36	96	33	56	93	30
17	94	30	37	97	29	57	95	29
18	57	29	38	96	25	58	97	30
19	80	22	39	92	31	59	78	27
20	95	32	40	90	25	60	97	26

APPENDIX C

DIRECTIONS FOR AND COPIES OF

VOWEL DELETION AND CLOZE TESTS

DIRECTIONS FOR VOWEL DELETION AND CLOZE TESTS

as Read by Experimenter

CLOZE PROCEDURE

On the next page, you will see an ordinary paragraph except that it will have some words missing. Instead of those missing words, there will be a line. Your job will be to fill in the blanks with the words that should go there. You should use the entire sentence and perhaps even the paragraph to help you get the answer. Spelling will not count, so don't be afraid to write the word because you're not sure how to spell it. You'll notice that every line is the same size even if the words are not. If you come to one that you can't figure out, don't waste time on it, but keep going. You'll probably have time to go back to it after you've finished. Remember that there will be only one word to be written on each line.

VOWEL DELETION

On the next page, you will see an ordinary paragraph except that all the vowels in the words are missing. Instead of the missing vowels, there will be a line. Your job will be to fill in the blanks with the vowels that should go there. You should use the whole sentence to help you get the answer. In this test, spelling will count, so be careful to make your writing clear. There will be only one vowel missing from each line. If you come to one that you can't figure out, don't waste time on it, but keep going. You'll probably have time to go back to it after you've finished. Think of the

vowels are missing from the paragraph. You should put only one vowel on each line.

EIGHTH GRADE - CLOZE

SAMPLE

Shortly after we _____ turned in, the wind began to _____ from the southeast. First it _____ flapped the tent cloth lightly. Then _____ noise swelled to a deafening roar _____ the wind piled up a blanket _____ drift. For five days we huddled _____ our tents.

EIGHTH GRADE - CLOZE

1

Now that the worst of the _____ was behind us, it was time _____ put our field plans into operation. _____ plan was to set up a _____ station on top of Palmer Land _____, at an elevation of 6,000 feet. _____ top of the plateau was reached _____ climbing a series of glaciers, which _____ like long ramps. The plateau stretched _____ than a thousand miles from the _____ of the peninsula to the interior _____ the mainland.

Transportation for the establishment _____ our meteorological station would be provided _____ dog team. Once it was in _____ and as soon as the meteorologists _____ marked out a suitable landing field, _____ additional supplies could be flown up _____ a small airplane. My plan was _____ take two dog teams and my _____ up to the plateau. After setting _____ the camp, we would return, leaving _____ last two there to run the _____. In a few weeks we'd fly _____ another pair of men to relieve _____.

We set out around nine on the _____ of July 15. A week of _____ winds had hardened the surface of _____

EIGHTH GRADE - CLOZE

2

snow to make good traction for _____ dogs. By nine-thirty we were out _____ sight of the camp and climbing _____ glacier. I pointed out the crevasses, _____ the tenderfeet to watch out for _____ and stressed the importance of traveling _____ skis in crevassed terrain. Our two _____ were loaded with stoves, tents, sleeping _____, crampons, a trail radio, fur mats, _____ utensils, and the usual huge supply _____ food necessary to live in that _____ waste.

The first day we covered _____ miles and camped a few miles _____ the steep slope that led to _____ plateau. That night the temperature dropped _____ minus 20 degrees. For those who _____ never before spent the night in _____ sleeping bag on the trail, it _____ quite a surprise. After lying snugly _____ their bags, they crawled out to _____ that the cold air was like _____ bucket of ice water in the _____. The next morning we set out _____ before daylight.

EIGHTH GRADE - VOWEL DELETION

SAMPLE

T h _ s _ t _ m p _ r _ t _ r _ s g _ v _ y _ _

_ n _ d _ _ _ f h _ w v _ r _ _ b l _

_ n t _ r c t _ c w _ _ t h _ r _ s.

EIGHTH GRADE - VOWEL DELETION

_ f t _ r t _ _ g h d _ _ s _ f t h _ w _ r s t

l _ v _ n g c _ n d _ t _ _ n s _ n t h _ _ n t _ r c t _ c,

_ d _ c _ d _ d t h _ t t h _ f _ _ r _ f _ s

w h _ w _ r _ t _ r _ t _ r n t _ b _ s _ h _ d

b _ t t _ r d _ s _ b _ f _ r _ w _ c _ n s _ m _ d _ l l

t h _ f _ _ d _ n d f _ _ l m _ _ n t f _ r t h _

t w _ w h _ w _ r _ t _ s t _ _. T h _ w _ _ t h _ r

m _ d _ r _ t _ d _ l _ t t l _, t h _ s _ n

m _ m _ n t _ r _ l _ p _ _ k _ d _ v _ r t h _ m _ _ n t _ _ n s.

SEVENTH GRADE - CLOZE

SAMPLE

Real-life drama, when it happens, happens _____ you don't expect it. It was _____ way with us. We never expected _____ drama, any cliff-hanging adventure. Our expedition, _____ far, had been just what we wanted _____ to be: a vacation, usually very _____ and often quite funny, with a _____ challenge to keep us busy.

SEVENTH GRADE - CLOZE

1

The story _____ on July 31st. At eight o' clock _____ morning Dave and Jim were still _____ bed at High Camp. They were _____ asleep, for sleep is next to _____ at 21,000 feet where the air _____ very thin. The day was gray; _____ temperature was 10 degrees above zero. _____ their stuper there seemed little reason _____ get out of the sleeping bags, _____ only warm spots in the whole _____.

The rest of the party, all _____ with a virus-cold infection, were camped _____ Col Camp about three thousand feet _____. It was ten o' clock in the _____ before those in Col Camp, using _____ binoculars, spotted Dave and Jim as _____ left their tent for the assault.

_____ sunlight came streaming down the Yerupaja _____ as it crept through the clouds _____ hung over head. Dave hacked his way _____ the gully behind High Camp. Jim, _____ by a rope to Dave, followed. _____ the top of the gully, Dave _____ Jim a taut rope so that _____ could scramble up alongside. For the _____ half hour they zigzagged up the _____, Dave leading and Jim hurrying to _____ up. Once they came to a _____

SEVENTH GRADE - CLOZE

2

crevasse with a thin ice bridge _____ it. Nothing seemed to hold the _____ in place. It was six feet _____ and only a foot wide at _____ middle. Snow chipped off the edges _____ rattled into the crevasse as Dave _____ Jim pussyfooted across it.

Slowly they _____ the cloud blanketed crest. Sometimes climbing, _____ chinning, they worked their way up _____ feet of ledges to a final _____ of crevasses. Then they jumped across _____ last crevasse, and at a break _____ the cornice, stepped onto the ridge _____ to the summit. The clouds closed _____, and we at Col Camp saw _____ more of the climb.

The sway-back _____ ridge rose in a long and _____ slope toward the summit: it was _____ route Dave had planned on for _____ weeks. But Yerupaja was no place _____ blindman's bluff. Today, lost in the _____, the ridge was nothing but a _____.

SEVENTH GRADE - VOWEL DELETION

SAMPLE

T h _ s_ 'w _ r _ t h _ s t _ r _ _ s _ f

s _ p _ r m _ n, n _ t r _ _ l p _ _ p l _.

SEVENTH GRADE - VOWEL DELETION

_ b _ v _ t h _ m, t h _ w _ n d h _ w l _ d

_ n d s _ n t _ c h _ _ s r _ _ r _ n g _ g _ _ n s t

t h _ _ c _ w _ l l s. _ r m s _ f f _ g

d r _ f t _ d d _ w n _ r _ _ n d t h _ m l _ k _

d _ n c _ r s _ n s l _ w m _ t _ _ n. D _ v _

_ n d J _ m w _ r _ w _ l k _ n g _ l _ n g t h _

b _ t t _ m _ f t h _ c r _ v _ s s _, f _ l l _ w _ n g

_ d _ m- _ n d s _ n l _ s s _ l l _ _ w _ _

t _ w _ r d t h _ s _ m m _ t. _ t f _ r s t t h _

c r _ v _ s s _ w _ s _ n l _ f _ _ r f _ _ t d _ _ p.